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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,072	01/19/2001	Hisham S. Abdel-Ghaffar	2925-0502P	6788

30594 7590 11/30/2009
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EXAMINER

CONNOLLY, MARK A

ART UNIT	PAPER NUMBER
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2115

MAIL DATE	DELIVERY MODE
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11/30/2009

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HISHAM S. ABDEL-GHAFFAR

Appeal 2009-004400
Application 09/764,072
Technology Center 2100

Decided: November 30, 2009

Before JAMES D. THOMAS, HOWARD B. BLANKENSHIP, and
ST. JOHN COURTENAY III, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-11, which are all the claims in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Invention

Appellant claims a method for determining a time offset estimate between a central node and a secondary node, in which the central node receives downlink and uplink timing information from a secondary node. The downlink and uplink timing information are measured based on a periodic timing scale. The downlink timing information represents timing information for communication between the central node and the secondary node, and the uplink timing information represents timing information for communication from the secondary node to the central node. The central node compensates the timing information for time wraparound, and determines the time offset estimate based on the compensated timing information. Abstract.

Representative Claims

1. A method of determining a time offset estimate between a central node and a secondary node, comprising:

receiving, at a central node, downlink and uplink timing information from a secondary node, the downlink and uplink timing information based on a periodic timing scale, the downlink timing information representing timing information for communication from the central node to the secondary node and the uplink information representing timing information for communication from the secondary node to the central node;

converting the received downlink and uplink timing information to a continuous time scale; and

determining, only after the converting step, a time offset estimate between the central node and the secondary node based on the converted downlink and uplink timing information.

11. A method of determining a time offset estimate between a central node and a secondary node, comprising:

receiving, at a central node, downlink and uplink timing information from a secondary node, the downlink and uplink timing information based on a periodic timing scale, the downlink timing information representing timing information for communication from the central node to the secondary node and the uplink information representing timing information for communication from the secondary node to the central node;

adjusting the received downlink and uplink timing information for time wraparound; and

determining, only after the adjusting step, a time offset estimate between the central node and the secondary node based on the adjusted downlink and uplink timing information.

Prior Art

Thornberg	U.S. 5,757,772	May 26, 1998
Premarlani	U.S. 5,958,060	Sep. 28, 1999

Examiner's Rejections

Claims 1-4 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Premarlani.

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Premierlani.

Claims 5, 6, and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Premierlani and Thornberg.

Claim Groupings

Based on Appellant's arguments in the Appeal Brief, we will decide the appeal on the basis of claims 1 and 11, which are the only independent claims on appeal. *See* 37 C.F.R. § 41.37(c)(1)(vii).

FINDINGS OF FACT

Premerlani

Premmerlani describes determining round trip delay between two terminals by subtracting a first and a second set of four time stamps. The clock offset can be calculated by adding the two delays between the terminals and dividing by two. The time stamps may, however, be unsigned numbers that wrap around. To compensate for rollover of particular time stamps, a predetermined number can be subtracted from the round trip delay and one half of the value can be subtracted from the clock offset, or the predetermined number can be added to the round trip delay and one half of the value can be added to the clock offset. The predetermined number is selected as the number of counts before which the clock rolls over. Col. 6, ll. 13-36.

PRINCIPLES OF LAW

Anticipation

“Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.” *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

Obviousness

The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966).

The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416 (2007).

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

Id. at 421.

ANALYSIS

In an earlier appeal (No. 2006-2544) in this application, the Board affirmed a § 102 rejection of then present claim 1 as being anticipated by Premierlani. We also entered a new ground of rejection against claim 11 as being anticipated by Premierlani.

Appellant argues that claim 1 and claim 11 were amended subsequent to the earlier appeal, such that the claims now distinguish over Premierlani. In particular, claim 1 has been amended to recite that the determining step occurs “only after the converting step.” Claim 11 has been amended to recite that the determining step occurs “only after the adjusting step.”

We will consider Appellant’s arguments in support of claim 1, which remains rejected under § 102(b) for anticipation by Premierlani, and claim 11, which is rejected over the same reference on obviousness grounds under 35 U.S.C. § 103(a).

Claim 1 -- § 102(b) Premierlani

Appellant submits that Premierlani discloses calculating the round trip delay *and then* performing a compensation for rollover. As we note *supra*, Premierlani describes compensating for rollover by subtracting a predetermined number from the round trip delay and subtracting one half of the value from the clock offset, or adding the predetermined number to the round trip delay and adding one half of the value to the clock offset. According to Appellant, Premierlani thus does not describe converting the received downlink and uplink timing information to a continuous time scale, *and then* determining a time offset estimate based on the converted downlink and uplink timing information.

We have considered the Examiner's views in response to Appellant's position. However, we agree with Appellant that claim 1 is not anticipated by Premierlani, because the reference does not describe determining a time offset estimate *only after* a step of converting the received downlink and uplink timing information to a continuous time scale.

Claim 11 -- § 103(a) Premierlani

Claim 11 appears to be broader than claim 1 in that it does not require the conversion of received timing information to a continuous time scale, but recites the step of "adjusting" the received downlink and uplink timing information for time wraparound. The claim further recites the step of determining, "only after the adjusting step," a time offset estimate based on the "adjusted" downlink and uplink timing information.

Appellant argues, and is correct, that Premierlani discloses adjusting the round trip delay for time wraparound, but not (directly) adjusting the downlink and uplink timing information. However, Appellant's conclusion that Premierlani cannot render obvious that which is claimed does not follow from showing that the reference fails to anticipate claim 11.

A combination may be obvious when there was a "finite number of identified" solutions for solving a problem. *See Bayer Schering Pharma AG v. Barr Laboratories, Inc.*, 575 F.3d 1341, 1347 (Fed. Cir. 2009) (discussing *KSR*, 550 U.S. at 421). Compensating for time wraparound by adjusting the received downlink and uplink timing information *before* determining clock offset appears to simply represent one of two possible ways to compensate for the known problem of time wraparound.

Premarlani discloses that the time stamps are examined to determine if time wraparound has occurred (if a time stamp earlier in time is greater than a time stamp later in time, wraparound has occurred); if needed, the clock offset can be compensated for the underlying time wraparound *after* adding the two delays between the terminals and dividing by two. However, because the need to compensate for time wraparound is determined by examining the time stamps that are used to calculate the delay between terminals, one of ordinary skill in the art would appreciate that the time stamps could be adjusted for time wraparound *prior to* determining the delay between terminals (and the clock offset).

Appellant has not shown (or even alleged) that adjusting the timing information *prior to* determining the time offset estimate represented something surprising to the ordinary artisan, or was otherwise beyond the level of ordinary skill in the art.

Conclusion

We are thus persuaded of error in the § 102(b) rejection applied against claim 1, but not in the § 103(a) rejection applied against claim 11.

Claims 1-4 and 7 are rejected under § 102(b) over Premarlani. The Examiner adds the teachings of Thornberg to Premarlani for the § 103(a) rejection against dependent claims 5, 6, and 8-10. Because Thornberg as applied does not remedy the deficiencies in the Examiner's rejection of base claim 1, we do not sustain the rejection of claims 1-4 and 7 under 35 U.S.C. § 102(b) as anticipated by Premarlani or the rejection of claims 5, 6, and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Premarlani and

Thornberg. We sustain the § 103(a) rejection of claim 11 as being unpatentable over Premierlani.

DECISION

The rejection of claims 1-4 and 7 under 35 U.S.C. § 102(b) as being anticipated by Premierlani is reversed.

The rejection of claim 11 under 35 U.S.C. § 103(a) as being unpatentable over Premierlani is affirmed.

The rejection of claims 5, 6, and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Premierlani and Thornberg is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED-IN-PART

msc

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